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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/071,670	02/08/2002	Philip J. Kellman	PD-99W171	4015

22494 7590 05/04/2006

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CANTON, MA 02021-2714

EXAMINER

WOODS, ERIC V

ART UNIT	PAPER NUMBER
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2628

DATE MAILED: 05/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/071,670

Applicant(s)

KELLMAN ET AL

Examiner

Eric Woods

Art Unit

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— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-18, 22, 24-34 and 38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-18, 22, 24-34 and 38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 23 January 2006 has been entered.

Response to Arguments

Claims 1, 19-21, 23, and 35-37 have been canceled.

All independent claims have been amended as per the previous interview.

Applicant's arguments, see Remarks pages 1-6 and claim amendments, filed 23 January 2006, with respect to the rejection(s) of claim(s) 2-18, 22, 25-34, and 38 under 35 USC 103(a) have been fully considered and are persuasive.

Therefore, the rejection of claims 2-18, 22, 25-34, and 38 under 35 USC 103(a) has been withdrawn.

Any rejections against claims 1, 19-21, 23, and 35-37 have been withdrawn since those claims were canceled.

Applicant's arguments are directed to the previous grounds of rejection and the amended claims, which render them moot.

However, upon further consideration, a new ground(s) of rejection is made in view of various references as below.

With respect to all the claims below, applicant has not specifically pointed out and set forth what means correspond to what function, and the specification does not provide a guide. Therefore, examiner is giving claims their broadest reasonable interpretation in light of the specification for the claimed means. Examiner also points out that **during prosecution** examiner is entitled to consider valid **functional equivalents** to the claimed means, which are only specified in the instant application to be a computer (see Figure 3, where the receiver is generic (simply labeled as 'receiver'), the processor 40 constitutes the second means (no part is labeled as performing the second means), and the processor 40 constitutes the third means (the software within the memory has an 'icon size configuration', but for the system claims, only a processor with software in memory is required, generally, to meet the requirements under 35 USC 112, sixth paragraph). As such, the claims fail the both the functional and structural differentiation test required by *In re Donaldson* to separate the components as being further limited for system and apparatus-type claims.

In arguing for additional meaning for the means plus function claims, applicant is impermissibly importing limitations from the specification into the claims. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (as above) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Next, the terms “altitude of the object **relative to a geographic reference**” will be discussed. Specifically, if an underlying map includes objects that are prima facie at sea level (e.g. the ocean) then clearly if the altitude is reference to sea level, even if the altitude or height is absolute with respect to sea level, it would therefore still be “relative to a geographic reference,” namely the ocean.

Claim Objections

Claims 10 and 11 are objected to under 37 CFR 1.75 as being a substantial duplicate of claim 9. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper to object to the other as being a substantial duplicate of the other claim. See MPEP § 706.03(k).

-Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This claim is indefinite because it uses the conjunction “or” but refers to a group having two or more **required** members. It should still read “and”, since it does not use the “at least one of” language specified in claim 9.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 9-10, 12-13, and 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Azuma et al ("Visualization Tools for Free Flight Air-Traffic Management", eligible under 35 USC 102(b)).

As to claim 9,

A system for conveying location of an object comprising: (Preamble is not given patentable weight, since it only recites a summary of the claim and/or an intended use, and the process steps and/or apparatus components are capable of standing on their own; see *Rowe v. Dror*, 112 F.3d 473, 42 USPQ2d 1550 (Fed. Cir. 1997), *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir. 1999), and the like.)

-First means for receiving location information regarding the object, the location information including a first coordinate x, a second coordinate y, and a third coordinate z, wherein the third coordinate z represents an altitude of the object relative to a geographic reference; (Azuma clearly shows in Figure 3 and Figure 4 the altitude of the

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aircraft with respect to sea level – page 33, aircraft are tracked via GPS-WAAS, and then transmit that location data using ADS-B type systems. Such data is then received and put into the system (see Figure 2, for the shared memory that contains the data received from ADS-B, which **inherently** requires a receiver, where clearly ADS-B data contains aircraft location in three dimensions (since it's derived from GPS/WAAS))

-Second means for correlating the first and second coordinates (x, y) with a location of an icon in a display; (Azuma Figure 2, visualization modules, which generate the Plan view and Perspective view displays, which is clearly software within a computer memory, thusly meeting the limitation (as discussed in the Response to Arguments section above))

-Third means for correlating the third coordinate z with at least one of size, grayscale, intensity, or shape of the icon, wherein the at least one of the size, the grayscale, the intensity, or the shape of the icon changes in response to changes in the third coordinate z, and wherein the relationship between the at least one of the size, the grayscale, the intensity, or the shape of the icon and the third coordinate z is monotonic. (Azuma clearly shows in Figures 3 and 4 various two- and three-dimensional views of icons. These icons are specified to change **hue** with altitude, that is: "...lighter hues indicating higher altitudes..." (Azuma page 34, right hand column, top paragraph). This clearly constitutes a monotonic change in intensity of an icon (since the lightness of a hue corresponds to grayscale and/or intensity change of an icon with respect to altitude)).

The Azuma et al reference therefore teaches all the limitations of the above claim. However, Azuma does not expressly teach the "icon size configuration unit" in memory as software, but the system of Azuma performs such actions on a computer, so such a unit must exist. Further, software in memory can be partitioned into any particular set of structures, and it would be obvious that such a component would be required for the system of Azuma to function as it does. The fact the color of the icon may change to indicate direction is irrelevant to the fact that the icons do in fact change grayscale/intensity with respect to altitude irrespective of their base color. (Again, applicant's drawings show such a unit implemented in software in the memory of a computer).

The Azuma reference is clearly analogous art with respect to the instant invention since it is directed to air traffic control displays as shown in Figures 3 and 4 and monitors aircraft position and location.

As to claim 10, it is a duplicate of claim 9, and the same grounds of rejection are applied against it.

As to claim 12, this is system claim implementing the system of claim 9 (in that it specifies elements instead of generic 'means'). The rejection of that claim is incorporated by reference in its entirety. The first means of claim 9 is the receiver of claim 12, where Azuma clearly has a ADS-B receiver as shown in Figure 2, and location data is derived from GPS/WAAS data, which clearly provides latitude, longitude, and altitude of the aircraft relative to sea level, where the example in Figures 3 and 4 of Azuma has ocean in it, as explained above.

Clearly, Azuma must have a display to show the user Figures 3 and 4. This is inherent.

Azuma has a processor – see page 33, “The system consists of several processes that communicate using shared memory...” Clearly, Azuma has programs in memory that change icons as specified in the third means portion of the rejection of claim 9. As noted therein, such changes are monotonic.

As to claim 13, it is a method that the system of claim 9 implements; each means in claim 9 corresponds to the comparable step in the method, and the rejection to claim 9 is incorporated by reference in totality and no further comments are necessary.

As to claim 3, Azuma uses GPS data, which has (x, y) data in latitude / longitude format, which Azuma uses on the various Figures and plots.

As to claim 4, Azuma shows aircraft plots.

Claims 2, 5-8, 11, 14-18, 22, 24-34, and 38 are rejected under 35 USC 103(a) as unpatentable over Azuma in view of Hancock (US 5,179,377).

As to claim 11, this claim is identical to claim 9, the rejection to which is incorporated by reference. The only difference is that in the last clause, **two** different characteristics of the icon are made to vary to indicate altitude (e.g. shape, size, grayscale, brightness). Azuma does not expressly teach this limitation.

The Hancock reference clearly teaches that icons are changed in size with respect to each other when they are close to each other (e.g. the distance between the aircraft is sufficient to cause a traffic and/or resolution advisory) – see Hancock, Figures

1 and 2 – the icon size is clearly changed as the differential altitude changes –see 2:50-55, 3:35-50). The Hancock reference further teaches that it is advisable to have redundant coding (e.g. different color, size, and overlaid threat symbol) for an icon representing the aircraft. Note that Hancock clearly teaches that the size of the icon varies with respect to differential altitude (4:6-35 for Figure 2, with the icon size varying with the relative location of other planes to the present location of the aircraft). See also Abstract. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Azuma to change the size of an icon to present altitude information, since Hancock clearly teaches that redundant coding is a good idea so that the air traffic controller can more easily determine the altitude of an aircraft at a glance in a 2D plan view rather than a 3D perspective view, and so that the information is more accurately conveyed – visual redundancy does this. Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a linear increase in size rather than specific, discrete sizes because it would more easily convey the information to the user (since Azuma uses a monotonically varying, correlated quantity to determine icon hue, and since the shape is only being used to provide redundant information coding as specified in Hancock).

As to claim 14, Hancock further discloses that the characteristic of the icon which changes is intensity [i.e. intensity of color, as manipulating the intensity of color is well known in an analogous art in the process of bit modification] of the icon and third means is for correlating the third coordinate z with the intensity of the icon. (See Abstract, 2:21-

24, 2:31-36). Motivation and rationale is incorporated by reference from the rejection to claim 11 above.

Regarding claim 15, refer to the discussion for the claims 11 and 14 hereinabove, Hancock discloses that the intensity of the icon is selected from a limited number of discriminably different intensities. (See Hancock Abstract, 2:21-24, 2:31-36). Motivation and rationale is incorporated by reference from the rejection to claim 11 above.

Regarding claim 16, refer to the discussion for the claims 11 and 14 hereinabove, Hancock discloses that a continuously variable relationship between the intensity of the icon and the third coordinate z. (See Hancock Abstract, 2:21-24, 2:31-36). Motivation and rationale is incorporated by reference from the rejection to claim 11 above.

Regarding claims 17 and 18, the rejection to claim 14 above is incorporated by reference in its entirety. Azuma clearly teaches that a desired characteristic correlates with a higher value of the third coordinate – that is, the characteristic (grayscale, e.g. level of hue) changes monotonically with the value of the third coordinate (e.g. altitude). It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to vary such other characteristics as might be linked to the third coordinate in a similar manner.

The only difference between claims 17 and 18 is that the intensity is correlated with either a higher or lower intensity (e.g. the intensity changes in one direction or the other). This is purely a matter of design choice, and applicant has demonstrated no criticality. Therefore, since the direction of change is not important but rather the knowledge of what the change means (e.g. that lighter color is higher or lower) is the

critical portion, it is purely aesthetic design choice, which is **not** patentably distinct (see *In re Said*).

Regarding claim 22, the rejection to claim 11 is incorporated by reference, where the shape of the icon is changed and the rationale, etc, is supplied therein.

Regarding claims 24 and 25, See Hancock Abstract, 2:21-24, 2:31-36. Motivation and combination as well as explanation of how and why using shape would be obvious are that of the rejection to claims 11 and 14, which are incorporated by reference.

As to claim 26, Hancock teaches a limited number of discriminably different sizes (e.g. 3)(3:5-4:55).

As to claim 27, clearly Azuma teaches a continuously variable relationship between hue and altitude, and following that logic (if size is replaced for hue), then continuous variability would be obvious. Also, size is easier to discriminate than hue if the operator of such a system is under high cognitive workload (this is well known in the art), which provides the motivation for replacing hue with size. Also, Hancock clearly points out that size is preferred, given that Figures 1 and 2 illustrate variation and proximity by means of changing the size of an icon.

As to claims 28 and 29, the rejection to claim 14 above is incorporated by reference in its entirety. Azuma clearly teaches that a desired characteristic correlates with a higher value of the third coordinate – that is, the characteristic (grayscale, e.g. level of hue) changes monotonically with the value of the third coordinate (e.g. altitude). It would therefore have been obvious to one of ordinary skill in the art at the time the

invention was made to vary such other characteristics as might be linked to the third coordinate in a similar manner.

The only difference between claims 28 and 29 is that the altitude is correlated with either a smaller or larger size (e.g. the size changes in one direction or the other). This is purely a matter of design choice, and applicant has demonstrated no criticality. Therefore, since the direction of change is not important but rather the knowledge of what the change means (e.g. that lighter color is higher or lower) is the critical portion, it is purely aesthetic design choice, which is **not** patentably distinct (see *In re Said*).

As to claim 30, the rejection to claim 14 is incorporated by reference in its entirety. This is the same dependent claim, with the intensity being the characteristic that changes.

As to claim 31, the rejection to claim 15 is incorporated by reference.

As to claim 32, the rejection to claim 16 is incorporated by reference.

As to claims 33 and 34, the rejections to claims 17 and 18 are incorporated by reference.

As to claim 38, Hancock clearly teaches that the shape of the icon can change, see (See Abstract line 6-10, Fig 1-3, col 1 line 22-37, col 2 line 28-47)('overlaid threat symbol'). Motivation and rationale are incorporated by reference from the rejection to claim 11.

As to claim 2, the rejection to claim 24 is incorporated by reference.

As to claim 5, the rejection to claim 26 is incorporated by reference.

As to claim 6, the rejection to claim 27 is incorporated by reference.

As to claims 7 and 8, the rejections to claims 28 and 29 are incorporated by reference.

Conclusion

Applicant is strongly encouraged to carefully read the attached Johnston reference.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Woods whose telephone number is 571-272-7775. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eric Woods

April 19, 2006


ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER